

Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Administrator and membership roster for each study section, click on the study section roster under the study section name within the IRG listed below or go to the [study section index](#) (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

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Referral & Review

Immunology IRG [IMM]

The Immunology [IMM] IRG reviews applications that seek an understanding of the immune system's role in host interactions with infectious agents, tumor cells, transplanted cells, self components, the conceptus/fetus, allergens, and environmental exposures; mechanisms, prevention, and treatment of diseases when the immune system has a major role; the evolution, comparative biology, development, structure, aging, and malfunction of the immune system; the molecular, cell, organ, and organismal biology of the immune system; the biophysical and structural analysis of antigens and immune system products and components; the interactions of the immune system with other organs, such as the nervous and endocrine systems; and the participation in immunity by non-lymphohematopoietic tissues and cells, such as epithelia.

The following study sections are included within the IMM IRG:

[Innate Immunity and Inflammation \[III\]](#)

[Immunity and Host Defense \[IHD\]](#)

[Cellular and Molecular Immunology \[CMI A and B\]](#)

[Hypersensitivity, Autoimmune, and Immune-mediated Diseases \[HAI\]](#)

[Transplantation, Tolerance, and Tumor Immunology \[TTT\]](#)

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Innate Immunity And Inflammation Study Section [III]

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The Innate Immunity and Inflammation study section reviews applications involving basic aspects of innate immunity and inflammation, including studies of soluble and cellular mediators of these processes.

Specific areas covered by III:

- Animal and plant systems of innate immunity and animal systems of inflammation.
- Development, activation, and evolution of effector functions of innate immune cells including NK cells, phagocytes, gamma/delta T cells, B-1 cells, dendritic cells, and mast cells. Included are studies of phagocytosis, production of reactive oxygen and nitrogen intermediates, cytokine synthesis, cytolytic mechanisms, effector cell replication and death, and natural antibodies.
- Biochemistry, molecular and cell biology of pattern recognition receptors and ligands including Toll-like receptors, G protein coupled receptors, phagocytic receptors, scavenger receptors, Fc receptors, NK receptors and related molecules, and complement receptors.
- Inflammatory and anti-inflammatory cytokines and chemokines, lipid mediators and other autacoids, and their receptors. Included are studies of regulation of expression, structure-function relationships, target cell responses, receptor signal transduction, and biologic roles of these molecules.
- Complement and other soluble host defense proteins and their regulation.
- Immunodeficiencies involving the inflammatory and innate immune systems.
- Recruitment and activation of non-lymphocyte leukocytes utilizing mechanisms including adhesion molecules, chemotaxis and related phenomena, and endothelial responses.
- Structure, function, and release of anti-microbial peptides, for example defensins, when the focus is the immune system.
- Systemic and tissue specific responses to inflammation, including acute phase proteins, tissue/cell injury, repair and remodeling.
- Initiation of host responses in skin and mucosal sites by innate immune mechanisms.
- Mechanisms of the regulation of adaptive immune responses by innate immune mediators and their receptors.
- Innate immunity in privileged sites, such as eye, reproductive organs, and brain if the focus is the immune system.

III has the following shared interests within the IMM IRG:

- **With Immunity and Host Defense [IHD]:** If the primary focus of an application is innate immunity in relation to a specific pathogen, assignment may be to IHD. If the primary focus of an application is innate immunity in general, assignment may be to III.
- **With Cellular and Molecular Immunology [CMI]:** Studies at the interface of innate immunity and antigen presentation will overlap with III, as will studies focusing on inflammatory chemokines and leukocyte migration into inflammatory sites. If innate immunity is the central focus, assignment to III may be appropriate; if antigen presentation is the central focus, assignment to CMI A or B may be appropriate. Studies that focus on NK receptor signaling may be assigned to III. Cell signaling pertaining to immune disorders may be referred to III, whereas studies that focus on immune mechanisms may be referred to CMI A or B.
- **With Hypersensitivity, Autoimmune and Immune-mediated Diseases [HAI]:** If the primary focus of an application is disease-specific inflammation or innate mucosal immune function, assignment may be to HAI. In addition, if the primary focus of immunodeficiencies is lymphocytes and other cells of the adaptive immune response, assignment may be to HAI. If the primary focus of an application is basic inflammation or innate immune function, assignment may be to III.
- **With Vaccines Against Microbial Diseases [VMD]:** Disease-specific immune function is a shared interest. If the primary focus of an application is basic inflammation or innate immune function, assignment may be to III. If the primary focus of a disease-specific immune function application is a disease-specific vaccine, assignment may be to VMD.

III has the following shared interests outside the IMM IRG:

- **With the Infectious Diseases and Microbiology [IDM] IRG:** Applications focusing on the pathogen may be referred to IDM. Applications focusing on the host response to pathogens may be referred to III. Applications focusing on host-pathogen interactions are a shared interest and may be assigned to IDM or III depending on the central thrust of the scientific questions.
- **With the AIDS and Related Research [AARR] IRG:** Applications focusing on the immune response to HIV may be referred to AARR. Applications focusing on the basic immune response to other viral pathogens may be referred to III.
- **With the Hematology [HEME] IRG:** Myelopoiesis and lymphopoiesis are shared interests with HEME. In general, when the focus of an application is myeloid cells or mature lymphocytes in the context of their roles in immunity or host defense, assignment to III may be appropriate. Assignment to HEME may be appropriate when the focus is erythroid or myeloid cells in the context of their roles in hematology or hematologic disorders.
- **With the Cardiovascular Sciences [CVS] IRG:** Applications focusing on endothelial cell activation may be referred to CVS. Applications focusing on leukocytes may be referred to III.
- **With the Digestive Sciences [DIG]; Musculoskeletal, Oral, and Skin Sciences [MOSS]; and Respiratory Sciences [RES] IRGs:** Innate immunity is a shared interest for III, DIG, MOSS, and RES. Applications where the focus is on organ-specific physiology or pathology, including injury and inflammation, may be assigned to the relevant organ-specific IRG. Those where the focus is on basic or multi-organ aspects of the immune response or leukocyte biology may be assigned to III.
- **With the Brain Disorders & Clinical Neuroscience [BDCN], Integrative, Functional, & Cognitive Neuroscience [IFCN], and Molecular, Cellular, & Developmental Neuroscience [MDCN] IRGs:** Neuroimmunology, including studies of inflammation and innate immunity in the nervous system and disorders of the immune system with neurological sequelae, are areas of shared interest. Applications focusing on nerve function may be assigned to BDCN, IFCN, or MDCN. Applications focusing on immune function may be assigned to III.
- **With the Biobehavioral and Behavioral Processes [BBBP] IRG:** Interactions of behavioral stress, emotion, personality, sickness behavior, and psychopathology with the immune system are shared interests. Studies that focus primarily on behavioral effects could be assigned to BBBP; studies that focus primarily on immune effects could be assigned to III.

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Immunity and Host Defense Study Section [IHD]

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The Immunity and Host Defense study section reviews applications involving host defense, systemic and mucosal immunity.

Specific areas covered by IHD:

- **Host-microbe interactions:** Innate and acquired host immune responses to specific pathogenic organisms including viruses, bacteria, fungi and parasites; host responses to commensal microbes; host factors, including

genetic predisposition or resistance to infection.

- **Innate immunity to microorganisms:** Cells, receptors, cytokines, chemokines, and soluble mediators that provide early protection from injury due to pathogens and their products or responses to commensal organisms. Innate immune cells include but are not limited to NK cells, phagocytes, gamma/delta and NK T cells, B-1 cells, dendritic cells, and mast cells. Receptors include but are not limited to molecules that are expressed by these cells and are used in innate immunity, including chemokine and other G-protein coupled receptors, Toll-like receptors, NK cell activation and inhibitory receptors, phagocytic receptors, pattern recognition receptors, Fc receptors, adhesion receptors, co-stimulatory molecules, and cytokine receptors.
- **Mucosal immunity:** Host immune responses in mucosal sites to specific pathogens, including viruses, bacteria, fungi and parasites and regulation by commensal microbes. Topics include but are not limited to induction and modulation of mucosal immune responses. Studies include comparison of mucosal immunity versus systemic immunity, differentiation of immune responses in the mucosa and peripheral lymphoid tissues, and immune cell migration to mucosal sites, including inductive and effector sites.
- **Host defense:** Innate and acquired immune responses that protect the host from deleterious effects of pathogens, including basic mechanisms of immune responses to limit pathogen invasion and toxicity, and development of animal models of potential bioterrorism agents.
- **Immune response to gene therapy agents:** Immune responses that limit the effectiveness of treatment through gene transfer, including response to gene therapy vectors and gene products.

IHD has the following shared interests within the IMM IRG:

- **With Innate Immunity and Inflammation [III]:** If the primary focus of an application is innate immunity in general, assignment may be to III. If the primary focus of an application is innate immunity in relation to a specific pathogen, assignment may be to IHD.
- **With Hypersensitivity, Autoimmune, and Immune-mediated Diseases [HAI]:** Applications dealing with inflammation of the lung and airway epithelium and with immunologic aspects of digestive sciences, including inflammatory bowel diseases, may be referred to HAI. Applications dealing with basic mucosal immunity and inflammation may be referred to IHD.
- **With Vaccines Against Microbial Diseases [VMD]:** Applications dealing with basic mucosal immunity and inflammation may be referred to IHD. Applications dealing with modulation of mucosal immunity from the point of view of developing a vaccine may be referred to VMD.

IHD has the following shared interests outside the IMM IRG:

- **With the Infectious Diseases and Microbiology [IDM] IRG:** Applications dealing with host-pathogen responses may be assigned to IDM if the application focuses primarily on the pathogen. Applications dealing with host-pathogen responses may be assigned to IHD if the application focuses primarily on the host immune response. If focus is host-pathogen interactions, assignment should be based on the central thrust of the application.
- **With the AIDS and Related Research [AARR] IRG:** Applications dealing with immune responses to HIV may be assigned to AARR. Applications dealing with specific immune responses to other pathogenic organisms may be assigned to IHD.
- **With the Digestive Sciences [DIG] IRG:** Mucosal receptors for pathogens, inflammation, and innate immunity are areas of shared interest between DIG and IHD. Applications where the focus is gastrointestinal physiology or pathology, including injury and inflammation, may be assigned to DIG. Where the focus is basic or multi-organ aspects of the immune response or leukocyte biology may be assigned to IHD.
- **With the Respiratory Sciences [RES] IRG:** Studies of the lung airway epithelium could be referred to RES if the focus of the study is unique to the respiratory system. If the utility of the study results could extend beyond

the respiratory system, assignment could be to IHD.

- **With the Biobehavioral and Behavioral Processes [BBBP] IRG:** Interactions of behavioral stress, emotion, personality, sickness behavior, and psychopathology with the immune system are shared interests. When such studies focus primarily on behavioral effects they could be assigned to BBBP; when such studies focus primarily on immune effects they could be assigned to IHD.

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Cellular and Molecular Immunology A and B Study Sections [CMI A & B]

[\[CMIA Roster\]](#) [\[CMIB Roster\]](#)

The two Cellular and Molecular Immunology study sections review applications that investigate the biochemical, cell biological and genetic processes that regulate the development, survival, death, activation and function of lymphocytes and other cells of the adaptive immune system. The two study sections are to be considered as interchangeable, with a few areas of specialization in each.

Subjects to be reviewed by either CMI study section include:

- Gene regulation during lymphocyte development, differentiation or response to environmental signals or cytokines.
- Lymphocyte development and differentiation from hematopoietic precursors.
- The selection of lymphocyte repertoire during development and during responses to antigen. The mechanisms and regulation of VDJ recombination of TCR and Ig genes, isotype switching and the somatic hypermutation of immunoglobulin genes.
- The differentiation of naive lymphocytes into specialized effector cells and long-lived memory cells.
- Molecular and biochemical aspects of lymphocyte activation induced by antigens, hormones, cytokines and costimulatory molecules.
- Lymphocyte homeostasis including the survival and persistence of peripheral B and T cells. This area would be expected to include studies on thymus and bone marrow output and lymphocyte competition in peripheral lymphoid organs.
- Basic mechanisms of myelo- and lympho-poietic cell cycle, growth control, and death.
- Lymphocyte homing, migration, and chemokines. Regulation of expression and function of cell adhesion, inhibitory, and chemokine receptors. Lymphocyte migration and localization within secondary lymphoid organs and non-lymphoid tissues. Interactions of lymphocytes with endothelium. Signal transduction pathways and cellular processes regulating lymphocyte migration, including cell polarization and cytoskeletal reorganization.
- Genesis of lymphoid organs.
- Antigen processing and presentation. Antigen recognition by T cells. Structural and functional investigations of classical and non-classical MHC molecules and their ligands. Pathways involved in antigen uptake, internalization, and intracellular processing. Investigation of the function of different antigen-presenting cell types and mechanisms that regulate antigen presentation function by dendritic cells, B cells, macrophages and other antigen-presenting cell types.
- Interface between innate and adaptive immunity, including studies in nontraditional model systems, the effects of innate immunity on the function of antigen presenting cells and lymphocytes as well as the actions of adjuvants.
- Intracellular signaling, including studies on the composition, assembly and function of signal molecules involved in antigen-specific immune responses. Visualization of signal molecule conformational change, module assembly, and translocation. The biochemistry of a diverse set of second messengers including lipid mediators and reactive nitrogen and oxygen species. Intercellular signaling through cell-to-cell contact, cytokines, and small lipid mediators.

Areas specific to individual study sections include:

Cellular and Molecular Immunology A

- **Biophysical analysis.** Three-dimensional structure determination of immune system molecules, and their complexes, by x-ray crystallography and nuclear magnetic resonance. Examples of appropriate targets include antibodies, T cell receptors, MHC and MHC-like molecules, NK receptors, accessory/costimulatory molecules, cytokines and cytokine receptors, and signaling proteins. Characterization of the interactions between these molecules using biophysical techniques such as surface plasmon resonance, analytical ultracentrifugation, calorimetry and mass spectroscopy.
- Development of antibodies and other proteins for therapeutic, analytic or diagnostic use in immunological systems. Application of biophysical methods for characterization of immunological systems.
- **Cell biology.** Investigation of basic aspects of cell biology as they relate to immune cell function, including the role and regulation of post-translational modifications, intracellular sorting and trafficking of molecules and vesicles, endocytosis and recycling of membranes, structure and function of membranes and membrane microdomains. Studies directed at elucidating structure/function relationships of supramolecular structures and organelles including cytoskeleton, nuclear matrix and envelope as they affect specific aspects of lymphocyte function.

Cellular and Molecular Immunology B

- Immune deficiencies. Identification and characterization of genetic disorders of the immune system that influence lymphocyte development, activation or differentiation.
- Application of genome-based information in resolving fundamental aspects of the control of expression of genes governing adaptive and innate immune responses. The application of computational as well as other experimental approaches directed at understanding the function of individual genes, multi-gene families, genome regulatory networks/circuits, and protein-protein or cell-cell interactions in immune responses is included. Investigations of the translation of genetic information to protein structure and other aspects of proteomics relating to basic immune mechanisms are within the scope of this review group.

CMI has the following shared interests within the IMM IRG:

- **With Innate Immunity and Inflammation [III]:** Studies at the interface of innate immunity and antigen presentation will overlap with III, as will studies focusing on inflammatory chemokines and leukocyte migration into inflammatory sites. If innate immunity is the central focus, assignment to III may be appropriate; if antigen presentation is the central focus, assignment to CMI A or B may be appropriate. Studies that focus on NK receptor signaling may be assigned to III. Cell signaling pertaining to immune disorders may be referred to III, whereas studies that focus on immune mechanisms may be referred to CMI A or B.
- **With Hypersensitivity, Autoimmune, & Immune-mediated Diseases [HAI]:** Studies of immune deficiencies not directly involved in defects of the lymphoid compartments may be assigned to HAI. Specific gene polymorphisms altering the function of the immune system and leading to an autoimmune or inflammatory disease or to immunodeficiency may be reviewed by HAI. Studies of basic lymphocyte development and differentiation may be assigned to CMI A or B. Cell signaling pertaining to immune disorders may be referred to HAI, whereas basic signaling molecules and pathways may be referred to CMI A or B.
- **With Transplantation, Tolerance, and Tumor Immunology [TTT]:** TTT shares interests with CMI A & B regarding the development of immune (both self and foreign antigen) tolerance. Applications studying the mechanisms of tolerance induction during lymphocyte development may be reviewed by CMI A & B, while immunoregulatory mechanisms of maintaining self-tolerance may be referred to TTT.
- **With Vaccines Against Microbial Diseases [VMD]:** Studies of specific gene polymorphisms altering the function of the immune system may be reviewed by VMD. Studies of basic lymphocyte development and

differentiation may be assigned to CMI A or B.

CMI has the following shared interests outside the IMM IRG:

- **With the Biological Chemistry & Macromolecular Biophysics [BCMB] IRG:** CMI A will have shared interests with BCMB in areas of structural biology. If the focus is immunology, review may be in CMI A unless the biophysical technique is highly specialized. Crystallographic and nuclear magnetic resonance approaches are broadly used and may be referred to CMI A. If the focus involves highly specialized, or emerging biophysical techniques, the application may be referred to BCMB.
- **With the Genes, Genomes, and Genetics [GGG] IRG:** Studies of gene expression in lymphocytes may overlap with the interests of GGG. If the focus is gene expression in the context of immunology then review may be in CMI A/B. If the focus involves specialized or emerging genetic approaches, then the application may be referred to GGG.
- **With the Cell Biology [CB] IRG:** Studies on gene expression and signal transduction may also overlap with the interests of CB. If the focus is cell biology in the context of immunology then review may be in CMI A/B. If the focus involves specialized or emerging cell biological approaches, then review may be in CMI A/B.
- **With the Hematology [HEME] IRG:** CMI A & B will have shared interests with HEME in areas related to blood cell formation. If the thrust of the study is immunological, involving lymphopoiesis, assignment to CMI may be appropriate. If the thrust is red blood cell or platelet production, then assignment to HEME may be appropriate. Myelopoiesis is an area of shared interest between the IMM and HEME IRGs.
- **With the organ-system and disease IRGs:** Studies of signal transduction and cell death in cells involved in various diseases and inflammation might be reviewed by study sections devoted to the particular disease, organ, or organ-systems to be studied. Similarly, the structure of some molecules might be better reviewed in the context of the cells or processes to which the molecules contribute, e.g., some cytokines and inflammation. Basic studies of signal transduction and cell death in cells involved in immunity and inflammation might be referred to the CMI study sections.

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Hypersensitivity, Autoimmune, And Immune-mediated Diseases Study Section [HAI]

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The Hypersensitivity, Autoimmune, and Immune-mediated Diseases study section reviews applications from basic, pre-clinical, and clinical investigators and involve the etiology, initiation, immunopathophysiology, prevention and treatment of diseases in which the immune system (innate and adaptive) is the major contributor. This includes autoimmune diseases, hypersensitivity and allergic diseases, asthma, primary and secondary states of immunodeficiency (non-AIDS), and inflammatory diseases.

Specific areas covered by HAI:

- Immune-mediated disease etiology, including genetic, developmental, hormonal, environmental factors (infectious and non-infectious) and lifestyle factors.
- Immune-mediated disease initiation, including activation of innate and antigen specific responses, cytokine regulation/polarization, regulatory cells and recruitment of inflammatory cells.
- Immune-mediated disease immunopathophysiology, including the balance of effector and regulatory factors and cells as well as mechanisms of tissue damage leading to chronicity, remission or relapse, and genetic and

exogenous factors modulating disease expression.

- Immune-mediated diseases that arise as a consequence of aging.
- Immune-mediated disease treatment, including antigen specific and non-specific drug and biologic approaches to tolerance to self or foreign antigens including vaccination, gene therapy, peptide and altered ligand approaches as well as cell based approaches; development of biomarkers of disease and related activities, and outcome assessments in clinical studies; determinants of response to therapy.
- Immune-mediated disease prevention, including identification of at-risk populations, immuno-epidemiology of genetic and environmental factors, and interventions aimed at altering the immune response so as to modify or prevent disease expression.

Approaches include human studies, in vitro studies of patient materials, animal models, and genomic and proteomic approaches to immune-mediated disease questions. These would include structural studies of antigenicity of allergens and autoantigens and the interaction of the nervous and endocrine systems with the immune system in immune-mediated disease.

Examples of appropriate diseases reviewed by HAI are:

- Allergic diseases including those leading to anaphylaxis, allergic rhinitis, sinusitis, and allergic reactions to foods.
- Investigation of lung diseases including hypersensitivity, pneumonitis, and the immune, inflammatory, and allergic elements of asthma, including asthma occurring in the occupational setting.
- Autoimmune diseases such as systemic lupus erythematosus (SLE), rheumatoid arthritis (RA), type I diabetes, multiple sclerosis, and anti-phospholipid syndrome.
- Inflammatory disorders such as inflammatory bowel diseases, vasculitis (polyarteritis), and innate inflammatory disorders such as familial Mediterranean fever (FMF) & Behçet's disease.
- Age-related changes in phenotype and function of T cells, B cells, and memory cells.
- Primary and secondary immunodeficiencies including damage to the immune system from exogenous agents.

HAI has the following shared interests within the IMM IRC:

- **With Innate Immunity and Inflammation [III]:** If the primary focus of an application is disease-specific inflammation or innate mucosal immune function, assignment may be to HAI. In addition, if the primary focus of immunodeficiencies is lymphocytes and other cells of the adaptive immune response, assignment may be to HAI. If the primary focus of an application is basic inflammation or innate immune function, assignment may be to III.
- **With Immunity and Host Defense [IHD]:** Applications dealing with inflammation of the lung and airway epithelium and with immunologic aspects of digestive sciences, including inflammatory bowel diseases, may be referred to HAI. Applications dealing with basic mucosal immunity and inflammation may be referred to IHD.
- **With Cellular & Molecular Immunology A & B [CMI A & B]:** Studies of immune deficiencies not directly involved in defects of the lymphoid compartments may be assigned to HAI. Studies of specific gene polymorphisms altering the function of the immune system and leading to an autoimmune or inflammatory disease or to immunodeficiency may be referred to HAI. Studies of basic lymphocyte development and differentiation may be assigned to CMI A or B. Cell signaling pertaining to immune disorders may be referred to HAI; whereas studies that focus on immune mechanisms may be referred to CMI A or B.
- **With Transplantation, Tolerance, and Tumor Immunology [TTT]:** TTT shares an interest with HAI in the development of autoimmunity. TTT focuses on fundamental issues of tolerance such as repertoire selection and tolerance induction, while HAI focuses on specific autoimmune diseases even though immunotherapy, autoimmunity, tolerance, or bone marrow transplantation may be addressed.
- **With Vaccines Against Microbial Diseases [VMD]:** Studies of specific gene polymorphisms altering the function of the immune system may be reviewed by VMD. Studies of basic lymphocyte development and differentiation may be assigned to CMI A or B.

HAI has the following shared interests outside the IMM IRG:

- **With the Biology of Development and Aging [BDA] IRG:** Shared interests include age-related changes in immunologic function. Studies focused on physiologic mechanisms of aging or on basic molecular and cellular aspect of aging, including T and B cell functions, could be assigned to BDA, particularly if relevant to multiple organs. Studies focused on specific immune mediated diseases could be assigned to HAI.
- **With the Cardiovascular Sciences [CVS] IRG:** Interests are shared between HAI and CVS in the mechanism of vascular damage and interaction between immune cells and endothelium. While studies of vascular inflammation may generally be referred to CVS, studies directed at vascular aspects of specific immune-mediated diseases may be referred to HAI.
- **With the Oncological Sciences [ONC] IRG:** Basic studies of tumor immunity and immune surveillance may be assigned to HAI. Translational studies that include the development and testing of immunotherapeutic approaches to cancer treatment may be assigned to ONC.
- **With the Endocrinology, Metabolism, Nutrition and Reproductive Sciences [EMNR] IRG:** Studies of immunologic aspects of endocrine disease, including type I diabetes, are shared interests. When primarily directed at the immune processes involved, applications may be referred to HAI. When primarily directed at the endocrine processes involved, applications may be referred to EMNR. In addition, when the focus is nutrients or other dietary components and their influences on the immune system, applications may be referred to EMNR.
- **With the Musculoskeletal, Oral, and Skin Sciences [MOSS] IRG:** Studies of animal models and clinical aspects of diseases of joints and connective tissues, including systemic lupus erythematosus, rheumatoid arthritis, Sjogren's, vasculitis and other inflammatory disorders may be appropriately assigned to HAI when they address immunologic aspects of disease etiology, initiation, pathophysiology, treatment, or prevention. Studies of end organ damage in immune-mediated disease may be assigned to MOSS.
- **With the Digestive Sciences [DIG] IRG:** Shared interests are immunologic aspects of bowel disease including inflammatory bowel disease, gluten specific autoimmune gastritis, and other types of immune mediated gastrointestinal diseases. Applications where the focus is gastrointestinal physiology or pathology, including injury and inflammation, may be assigned to DIG. Those where the focus is basic or multi-organ aspects of the immune response or leukocyte biology may be assigned to HAI.
- **With the Respiratory Sciences [RES] IRG:** Studies of lung diseases, including asthma, may be assigned to RES when the focus is the respiratory system. Studies of lung diseases, including asthma, may be assigned to HAI when the focus is the immune system.
- **With the Integrative, Functional, & Cognitive Neuroscience [IFCN] IRG:** Studies in which neuroendocrines alter immune responses are shared between IFCN and HAI. When nervous system mechanisms or pathology are the focus, the application may be assigned to IFCN. When the focus of the study is the altered immune function, assignment may be to HAI.
- **With the Brain Disorders & Clinical Neuroscience [BDCN] IRG:** Interest in studies of the effects of nervous system damage on immune responses are shared between BDCN and HAI. When nervous system damage is the focus of the study, assignment may be to BDCN. When the focus of the study is on the alteration in immune response resulting from brain damage, assignment may be to HAI.
- **With the Biobehavioral and Behavioral Processes [BBBP] IRG:** Interactions of behavioral stress, emotion, personality, sickness behavior, and psychopathology with the immune system are shared interests. When such studies focus primarily on behavioral effects they could be assigned to BBBP; when such studies focus primarily on immune effects they could be assigned to HAI.

- **With the Risk, Prevention and Health Behavior [RPHB] IRG:** Disease etiologies including lifestyle factors are shared interests. When such studies focus primarily on behavioral effects they could be assigned to RPHB; when such studies focus primarily on immune effects they could be assigned to HAI.

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Transplantation, Tolerance and Tumor Immunology Study Section [TTT]

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The Transplantation, Tolerance, and Tumor Immunology study section reviews grant applications that are from basic, pre-clinical, and clinical investigators and involve transplantation, tumor immunology, and cellular and molecular mechanisms of immunoregulation as they impact transplantation, self-tolerance, or effective tumor immunity. The study section balances the biological and clinical perspectives in the study of transplantation.

Specific areas covered by TTT:

- **Transplantation:** TTT reviews applications focused on all immunologic aspects of the rejection (acute or chronic) of transplanted organs, tissues and cells, in animal models and humans, including clinical tissue transplantation procedures, the development of xenograft procedures, bone marrow reconstitution, and stem cell engraftments. In addition, TTT reviews applications investigating strategies for the development of transplantation tolerance in clinical settings, for example the induction of anergy to grafts and cells, mechanistic studies of immunosuppressive agents, the manipulation and suppression of graft versus host disease, immunity to pathogens in transplantation, and the role of major and minor histocompatibility antigens in survival of organ transplants.
- **Tolerance:** The TTT study section reviews applications that investigate the fundamental immunologic mechanisms maintaining and breaching tolerance to self and novel antigens. This would include the characterization and manipulation of regulatory immune cells and molecules, strategies for inducing tolerance to organ transplantation, characterization of cellular interactions that promote and suppress the induction of immune responses, mechanisms of immune regulation or tolerance as applied to autoimmunity or autoimmune disease, and cellular and effector mechanisms that regulate immunity against tumors and organ transplants and recombinant proteins.
- **Tumor immunology:** TTT reviews applications focused on the identification and characterization of tumor antigens, the induction of immune responses to tumors, tumor vaccine development, and strategies for the immunotherapy of cancer, including the induction of specific effector cells and molecules. In addition, TTT will be appropriate for applications on mechanisms of immune evasion and immunosuppression by tumors, bone marrow transplantation as an element in cancer therapy, and the regulation of deleterious autoimmune responses during anti-tumor therapies.

TTT has the following shared interests within the IMM IRG:

- **With Cellular & Molecular Immunology A & B [CMI A & B]:** TTT shares interests with CMI A & B regarding the development of immune (both self and foreign antigen) tolerance. Applications studying the mechanisms of tolerance induction during lymphocyte development may be referred to CMI A & B, while immunoregulatory mechanisms of maintaining self-tolerance may be referred to TTT.
- **With Hypersensitivity, Autoimmune, & Immune-mediated Diseases [HAI]:** TTT shares an interest with HAI in the development of autoimmunity. TTT focuses on fundamental issues of tolerance such as repertoire selection and tolerance induction, while HAI focuses on specific autoimmune diseases.

- **With Vaccines Against Microbial Diseases [VMD]:** TTT shares an interest with VMD in the development of autoimmunity. TTT focuses on fundamental issues of tolerance such as repertoire selection and tolerance induction, while VMD focuses on vaccines against specific diseases.

TTT has the following shared interests outside the IMM IRG:

- **With the Oncological Sciences [ONC] IRG:** TTT has a shared interest with ONC in the area of tumor immunology. TTT may review applications that are focused on the basic and pre-clinical aspects of tumor immunology, for example animal models of cancer, while ONC may focus on pre-clinical and translational grant applications. TTT also shares an interest with ONC in the area of bone marrow transplantation, where again basic and pre-clinical studies may be assigned to TTT and translational and clinical studies may be assigned to ONC.
- **With the Hematology [HEME] IRG:** TTT has a shared interest with HEME with regard to bone marrow transplantation. If the principal question is immunological, then TTT may be the appropriate review assignment. If the principal question is red blood cell and platelet production, then HEME may be the appropriate review assignment. Myelopoiesis is an area of shared interest between the IMM and HEME IRGs.
- **With the Surgical Sciences, Biomedical Imaging, and Bioengineering [SBIB] IRG:** TTT has a shared interest with SBIB in organ, tissue and cellular transplantation. Review of transplantation immunology, particularly applications involving immunoregulatory aspects of transplantation immunology, may be assigned to TTT. Transplantation applications that are focused on non-immunological questions such as organ preservation and organ allocation may be assigned to SBIB.
- **With the Cardiovascular Sciences [CVS]; Endocrinology, Metabolism, Nutrition, and Reproductive Sciences [EMNR]; Musculoskeletal, Oral, and Skin Sciences [MOSS]; Digestive Sciences [DIG]; Respiratory Sciences [RES]; Renal and Urological Sciences [RUS]; Brain Disorders and Clinical Neuroscience [BDCN]; and Molecular, Cellular, & Developmental Neuroscience [MDCN] IRGs:** TTT has potential shared interests with several other study sections. Applications addressing organ-specific aspects of the physiology or pathology of transplantation, bacterial or dietary antigens, or immunity or tolerance could be assigned to the relevant organ-system IRG. Those addressing basic or general immunologic aspects of the physiology or pathology of transplantation, bacterial or dietary antigens, or tolerance could be assigned to TTT.
- **With the Biobehavioral and Behavioral Processes [BBBP] IRG:** Interactions of behavioral stress, emotion, personality, sickness behavior, and psychopathology with the immune system are shared interests. When such studies focus primarily on behavioral effects, they could be assigned to BBBP; when such studies focus primarily on immune effects they could be assigned to TTT.

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Vaccines Against Microbial Diseases Study Section [VMD]

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The Vaccines Against Microbial Diseases study section reviews applications on immune responses to pathogens and the development of safe and effective vaccines against pathogens other than HIV. The study section reviews basic and applied applications relating to the refinement and development of vaccines. Areas of interest include construction and improvement of vaccines and their delivery; development of methods to assess immune responses to vaccines; and assessment of immunogenicity, efficacy and safety in animal models and humans. The applications reviewed by this study section are distinguished from basic immunology- and pathogenesis-oriented applications designed to increase understanding of immune responses or pathogens as a necessary process that precedes vaccine development. The study section balances the perspectives of those expert in the basic immune system (innate and

adaptive) and of those expert in the complex biology of pathogens and their interactions with hosts.

Specific areas covered by VMD:

- Characterization of the immune responses that may be used to develop vaccines against infectious diseases other than AIDS
- Identification of pathogen components and polymorphisms that elicit protective or pathogenic immune responses relevant to vaccine design
- Enhancement of antigenicity by modification of pathogens' components
- Development of adjuvants, conjugants, and immunomodulators
- Improvement of methods for vaccine production, including vaccine constructs, plasmids and virus-like particles, peptide and protein vaccines, conjugation methods, and cell lines for vaccine production
- Development of new approaches to optimize delivery of vaccines, including those using vectors
- Development of animal models for assessing vaccine-based approaches to prevent or treat infectious diseases, including evaluation of immunogenicity, protection, and safety
- Methods for pre-clinical and clinical assessment of protective immune responses
- Research to improve immunogenicity or safety of existing vaccines

Approaches include patient studies, in vitro studies of human and animal materials, and animal models. Although full clinical trials would typically be assigned to ICs for review, applications addressing initial tests of vaccine concepts may be assigned to VMD.

VMD has the following shared interests within the IMM IRG:

- **With Innate Immunity and Inflammation [III]:** Disease-specific immune function is a shared interest. If the primary focus of an application is basic inflammation or innate immune function, assignment may be to III. If the primary focus of a disease-specific immune function application is a disease-specific vaccine, assignment may be to VMD.
- **With Immunity and Host Defense [IHD]:** Applications dealing with basic mucosal immunity and inflammation may be referred to IHD. Applications dealing with modulation of mucosal immunity from the point of view of developing a vaccine may be referred to VMD.
- **With Cellular & Molecular Immunology A & B [CMI A & B]:** Studies of specific gene polymorphisms altering the function of the immune system may be reviewed by VMD. Studies of basic lymphocyte development and differentiation may be assigned to CMI A or B.
- **With Hypersensitivity, Autoimmune, and Immune-mediated Diseases [HAI]:** Studies of specific gene polymorphisms altering the function of the immune system may be reviewed by VMD. Studies of specific immune-mediated diseases may be assigned to HAI.
- **With Transplantation, Tolerance, and Tumor Immunology [TTT]:** TTT shares an interest with VMD in the development of immunity. TTT focuses on fundamental issues of tolerance such as repertoire selection and tolerance induction, while VMD focuses on vaccines against specific diseases.

VMD has the following shared interests outside the IMM IRG:

- **With the Infectious Diseases and Microbiology [IDM] IRG:** If the focus of an application is host defense and immune responses to infectious organisms, assignment may be to VMD. If the focus is infectious organisms, assignment may be to IDM.
- **With the AIDS and Related Research [AARR] IRG:** Applications directed toward development of AIDS vaccines may be referred to AARR; those directed toward development of vaccines against other infectious

diseases may be referred to VMD.

- **With the Oncological Sciences [ONC] IRG:** Immune surveillance and tumor immunity are shared interests. Typically, studies of tumor immunity and immune surveillance, including the development and testing of immunotherapeutic approaches to cancer treatment, may be assigned to ONC. An application that addresses tumor immunology in the context of general vaccinology may be assigned to VMD.
- **With the Digestive Sciences [DIG] IRG:** Shared interests are immunologic aspects of bowel disease including inflammatory bowel disease, gluten specific autoimmune gastritis, and other types of immune mediated gastrointestinal diseases. Applications where the focus is gastrointestinal physiology or pathology, including injury and inflammation, may be assigned to DIG. Those where the focus is vaccine research may be assigned to VMD.
- **With the Health of the Population [HOP] IRG:** Epidemiological studies of vaccine efficacy may be assigned to HOP; small-scale clinical trials may be assigned to VMD.

**Immunology Small Business Activities [SBIR/STTR] Special Emphasis Panel
[IMM (10)]
[\[IMM Small Business SEP\]](#)**

The Immunology Small Business Activities Special Emphasis Panel [IMM Small Business SEP] IMM (10) reviews grant applications in the area of immunology for the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer Research (STTR) Programs at NIH. Applications that address basic and applied immunology, immunologic therapies, and diseases of immunologic origin are appropriate for review in the IMM Small Business SEP. The IMM Small Business SEP also reviews applications dealing with development of computer models of the immune system or of immunologic reactions.

Specific areas covered by the IMM Small Business SEP:

- Immunoassay reagents and development
- Antibody-specific reagents
- Cellular immune system-specific reagents
- Monoclonal antibody development
- Alternative production schemes for antibodies
- Immunology-based therapeutics
- Inhibitors of immune system interactions
- Innate immune system modulation
- Immunomodulation, suppression and enhancement
- Signal transduction pathways in immune cells
- The complement system
- Immuno-detection of infectious diseases
- Immunotherapy of infectious diseases
- Immuno-detection of autoimmune diseases
- Immunotherapy of autoimmune diseases

- Cytokine/lymphokine modulation
- Vaccines against microbial diseases
- Dendritic cell processing and modulation
- Animal models of immune disease(s)
- Immunology of transplantation; autologous, heterologous, xenogeneic
- Development of computer models of the immune system or immunologic reactions.

The IMM Small Business SEP has the following shared interests outside the IMM IRG:

- **With the Infectious Diseases and Microbiology [IDM] IRG:** Applications focusing of the pathogen should be referred to IDM. Applications focusing on the immune response to infection, immunotherapy of infection, or development of immunologic reagents for immunodiagnosis should be referred to IMM.
- **With the Musculoskeletal, Oral and Skin Sciences [MOSS] IRG:** Applications focusing of the pathogenesis, clinical manifestations and drug therapeutics of rheumatoid arthritis (RA) should be referred to MOSS. Applications focusing on immunotherapy of RA and other autoimmune diseases should be referred to IMM.
- **With the Oncological Sciences [ONC] IRG:** Applications focusing on the pathogenesis, clinical manifestations, and drug therapeutics of tumors and oncogenesis should be referred to ONC. Applications focusing on the basic science of the immunotherapy of tumors should be referred to IMM. Those dealing with immunodiagnosis of tumors or immunotherapy at the translational or clinical levels should be referred to ONC.
- **With the Respiratory Sciences [RES] IRG:** Applications focusing on the pathogenesis, clinical manifestations, and drug therapeutics of asthma and other lung-associated diseases should be referred to RES. Applications focusing on the immunotherapy of asthma and other hyperreactive and inflammatory diseases should be referred to IMM.
- **With the Bioengineering Sciences and Technologies [BST] IRG:** Applications dealing with the design or manufacture of mechanical, fluidic or electronic instruments should be assigned to BST. Those dealing with adaptation or fabrication of immunologic assays to existing instrumentation should be assigned to the IMM Small Business SEP.
- **With the AIDS and Related Research [AARR] IRG:** SBIR immunology applications which are AIDS related are to be assigned to the AARR IRG.

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